

**Industrial Economics 1: Strategic Behaviour**

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Time Allowed: 2 hours.

Answer **TWO** questions from **Section A** (60 marks total) and **ONE** question from **Section B** (40 marks). Answer **Section A** questions in one booklet and **Section B** questions in a separate booklet.

Approved pocket calculators are allowed.

Read carefully the instructions on the answer book provided and make sure that the particulars required are entered on each answer book. If you answer more questions than are required and do not indicate which answers should be ignored, we will mark the requisite number of answers in the order in which they appear in the answer book(s): answers beyond that number will not be considered.

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**Section A: Answer TWO questions**

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1. Consider two firms ( $j = 0, 1$ ) located at  $a_j$  along the unit interval  $[0,1]$  and a unit mass of consumers uniformly distributed between them. The preferences of a consumer located at point  $x \in [0,1]$  are determined by their underlying preferences for the two goods ( $U_j$ , assumed not to depend on  $x$ ), the prices of the two goods ( $p_j$ ), the distance from the consumer ( $x$ ) to the firms and a quadratic 'transport cost' from  $x$  to each of the firms ( $t(a_j - x)^2$ ): in other words, a customer at  $x$  will buy from firm 0 if  $U_0^x - p_0 - t(a_0 - x)^2 > U_1^x - p_1 - t(a_1 - x)^2$ .

Assume first that all customers regard both goods as identical ( $U_0 = U_1 = \bar{U}$  for all  $x$ ), and that firms choose locations  $a_j$  in the first stage and prices  $p_j$  in the second stage.

- (a) Given the firms' locations, find an expression giving the location of the consumer who is just indifferent between the two firms and use this to derive the sales by each firm as a function of their locations and prices. **(2 marks)**
- (b) If the firms have identical and constant marginal costs  $c$  (so the cost of producing a quantity  $q$  is  $cq$ ) solve for the equilibrium prices for given locations ( $a_j$ ) **(5 marks)**
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- (c) Under the further assumption that the firms choose locations equally spaced around the midpoint of the interval ( $a_0 = 1 - a_1$ ), show that the firms will choose the same prices and find the equilibrium locations and profits. Will firms try to minimise or maximise product differentiation (the distance between  $a_0$  and  $a_1$ )? **(5 marks)**
- (d) What happens to product differentiation if a regulator forces both firms to change the same price  $p_R > c$ ? What does this imply for the effect of price advertising on product differentiation? **(3 marks)**
- (e) What locations are socially efficient (assuming a symmetric equilibrium)? **(5 marks)**
- (f) How (if at all) are the results affected by informative advertising that changes the transport cost parameter  $t$ ? **(2 marks)**
- (g) How much would firm 0 pay for advertising that doubled the relative attractiveness of its product to consumers ( $U_0 = 2\bar{U}$ ,  $U_1 = \bar{U}$ )? **(8 marks)**
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2. In a particular country, the monopoly bicycle manufacturer Rally, sells its product to a network of retailers. Initially, Rally sets a wholesale price for bicycles and allows the retailers to choose their own price. Retailer B faces annual demand of  $q = 360 - 2p$ , where  $p$  is the price it charges per bicycle.
- (a) Suppose the wholesale price Rally charges is  $w$ , what is B's profit maximising price and quantity in terms of  $w$ ? **(4 marks)**
- (b) Suppose that Rally's cost of production is 70. What price ( $w$ ) will it charge B and how many bicycles will B sell? **(3 marks)**
- (c) Rally becomes disenchanted with this arrangement and considers alternatives. It rejects the alternative of full vertical integration with its retailers in favour of an "authorised dealer" arrangement whereby it would specify final selling prices. What advantages would such an arrangement have over the previous system and the alternative from Rally's viewpoint? **(5 marks)**
- (d) How many bikes would we expect retailer B to sell under the new arrangement? How would  $w$  be determined in this case? **(2 marks)**
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- (e) However, in the course of implementing the new scheme, Rally's legal compliance officer points out that the country's competition laws prohibit resale price maintenance (RPM). Nevertheless, she also points out that the same effect can be achieved through a combination of other, legal, restrictions, allocating "territories" to the retailers and insisting the retailers take at least a given quantity of bicycles from the manufacturer. Explain why. How many bikes will Rally set as a target for B? **(8 marks)**
- (f) A new rival manufacturer enters the market. It tries to attract the retailers to sell its bicycles in addition to those of Rally. However, it complains that it finds difficulty doing this, despite being more efficient, because of the contracts Rally's "authorised dealers" have signed with Rally, involving penalties for non-compliance. Rally retorts that, if the rival really were more efficient, it could easily attract dealers. Can the rival be right in its assertions? Explain. **(8 marks)**
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**3.** Describe what you understand by **four** of the following concepts or pairs of concepts, explaining the importance for the subject area of industrial economics and, where appropriate, illustrating your understanding by giving practical examples and explaining the differences: **(7.5 marks each):**

- (a) Persuasive as compared with informative advertising
- (b) Warranties and product differentiation
- (c) Symmetric versus asymmetric information on quality
- (d) Loyalty cards
- (e) Asset specificity
- (f) Pricing in the Varian/ Stahl search model.
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**Section B: Answer ONE question.**  
**Please use a separate booklet.**

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4. An early commentator on the development of internet commerce, Robert Kuttner, wrote: "The Internet is a nearly perfect market because information is instantaneous, and buyers can compare the offerings of sellers worldwide. The result is fierce price competition, dwindling product differentiation, and vanishing brand loyalty." (Robert Kuttner, Business Week, 1998).

Evaluate his predictions from the viewpoint of consumer search behaviour, seller behaviour and the role of comparison websites, discussing these both from the viewpoint of theory and empirical work where relevant. **(40 marks)**

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5. Some mobile and broadband providers offer menus of contracts, each of which combines a fixed charge and specific allowances for service, with extra service (more minutes, more GB of downloaded data) available for an additional unit cost. Explain the rationale behind this strategy and discuss the extent to which it is feasible for other industries to adopt the same approach. Can you explain why this model is gradually giving way to 'unlimited' contracts? Does either model raise significant competition policy concerns? **(40 marks)**
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6. Explain analytically how switching costs between products can lead to relatively uncompetitive outcomes compared with the situation where there are no switching costs. By means of examples, or otherwise, show how firms can create switching costs where they do not naturally exist. How would you expect firms to behave in a market where there are switching costs? Finally, evaluate the differences between "losing party led" and "gaining party led" frameworks for switching providers from the viewpoint of consumers. **(40 marks)**
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